

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
16 September 2004 (16.09.2004)

PCT

(10) International Publication Number  
**WO 2004/079841 A1**

- (51) International Patent Classification<sup>7</sup>: **H01M 4/62**
- (21) International Application Number: **PCT/KR2004/000442**
- (22) International Filing Date: **2 March 2004 (02.03.2004)**
- (25) Filing Language: **Korean**
- (26) Publication Language: **English**
- (30) Priority Data:  
**10-2003-0013760 5 March 2003 (05.03.2003) KR**
- (71) Applicant (for all designated States except US): **LG CHEM, LTD. [KR/KR]; 1.G Twin Tower, 20, Yoido-dong, Youngdungpo-gu, Seoul 150-721 (KR).**
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **KIM, Hae-Young [KR/KR]; 619-510, Mansu Jugong Apartment, Mansu-dong, Namdong-gu, Incheon 405-240 (KR). RYU, Dong-Jo [KR/KR]; 116-1101, Sammeori Apartment, Dunsan2-dong, Seo-gu, Daejeon 302-777 (KR). KIM, Ju-Hyun [KR/KR]; 3-326, LG Apartment, Doryong-dong, Yuseong-gu, Daejeon 305-340 (KR). HAN, Chang-Sun [KR/KR]; 8-301, Lucky Apartment, 381-42, Doryong-dong, Yuseong-gu, Daejeon 305-340 (KR).**
- (74) Agent: **KIM, Seong-Ki; 14F., Kukdong Building, 60-1, Chungmuro3-ka, Chung-ku, Seoul 100-705 (KR).**
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): **AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SI, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.**
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): **ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).**
- Published:**  
— *with international search report*
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: **THE CELL PROPERTY, ADHESIVE PROPERTY AND COATING PROPERTY-CONTROLLED BINDER FOR LITHIUM SECONDARY BATTERY WITH 2 OR MORE PHASES**

(57) Abstract: Disclosed is a binder comprising composite polymer particles having a structure formed of two or more phases different in terms of cell property, adhesive strength and/or coating property. The binder provides excellent cell property, adhesive strength and coating property, and thus the binder is used in an electrode of a lithium secondary battery to improve the cell performance.